

# DISSTON

## Professional Handsaw Guide

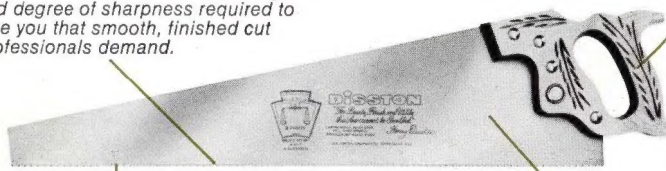




# How to choose and use hand saws

## Disston Professional Handsaw D-95, D-23, D-8, D-7

*Professional results . . . each cross-cut tooth is bevel filed to the exact angle and degree of sharpness required to give you that smooth, finished cut professionals demand.*



Blade length	Points per in.
Crosscut 16"	11
20"	10
24"	8, 10
26"	7, 8, 9
Rip 26"	10, 11, 12
	5½

*A handle that takes hard use . . . fine hardwood with covertop, comfort grip, and triple-lacquering . . . that's the Disston difference for years of service.*

*Accuracy, Disston delivers . . . the alternate precision setting of "Professional" handsaw teeth to close tolerances, gives you accurate sawing.*

*Effortless cutting . . . teeth remain razor sharp with Disston's Chrome nickel Alloy Steel Blades. In addition, each perfectly balanced Disston handsaw blade tapers a full four gauges from handle to tip and from tooth to back for bind-free cutting.*

## Disston Premium Handsaw R-1

*Premium results — each cross-cut saw tooth is bevel filed to the exact angle and degree of sharpness required to give you a smooth finished cut.*



Blade length	Points per in.
Crosscut	
20"	10
26"	8, 10
Rip 26"	5½

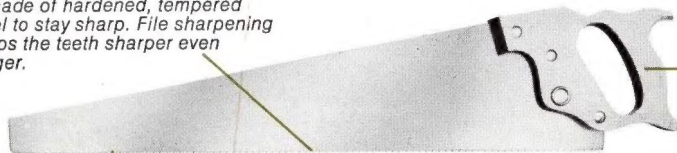
*Handles "built to last" the carved handle on each Disston Premium Handsaw is made of fine hardwood which is double lacquered for long life.*

*Accurate cutting for premium performance — teeth on Disston Premium Handsaws are precision-set to assure exact cutting accuracy.*

*Stays much sharper longer — the entire heavy gauge Alloy Steel blade of each Disston Premium Handsaw is hardened and tempered to provide a superior cutting edge.*

## Disston Standard Handsaw C-1

*Stays sharper, longer . . . the blade of each Disston Standard Handsaw is made of hardened, tempered steel to stay sharp. File sharpening keeps the teeth sharper even longer.*



Blade length	Points per in.
16"	10
20"	10
26"	8, 10

*Handles "built to take it" . . . the handle on each Disston Standard Handsaw is made of fine hardwood which is fully lacquered to last.*

*Cutting accuracy . . . teeth are set to exacting standards to assure smooth accurate cuts comparably priced saws cannot match.*



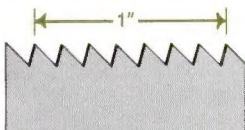
## The Cross-Cut Saw

The cross-cut saw is used for cutting across the grain, and has a different cutting action from that of the rip saw. The teeth cut like sharp-pointed knives. They are also made with more points to the inch than the rip saw. The front face of a cross-cut tooth has an angle of  $15^\circ$ ; the back of the tooth has an angle of  $45^\circ$ .

Unless the blade of a cross-cut saw is made of high grade steel, the teeth quickly lose their keen-cutting quality. When selecting a hand saw, cross-cut or rip "it is best to get one with a name on it which has a reputation" — quoted from the founder, Henry Disston.

### Points to the inch

Points to the inch is a term used to designate the size of teeth in a saw. The saw with a small number of tooth points to the inch, 7 points for example, will make a rough cut, yet cut fast. Saws with more points, say 10 or more, will make smooth, even cuts, but not cut as fast as the coarse tooth saw.



### Amount of set

The amount of set given a saw is highly important because it determines the ease with which the saw runs; it insures accuracy of cutting; and it helps keep the saw sharp for a longer time.

The nature and character of the wood to be cut also must be considered. Green or wet wood requires a saw with coarse teeth and wide set, 7 points to the inch, while a 10 or 11 point saw with light set will work better in dry, well seasoned lumber. For ordinary cross-cutting, the user will find the 7 or 8 point most in demand.

### Length of blades

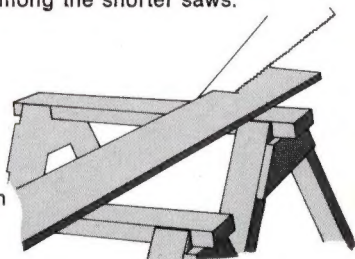
The length of either rip or cross-cut hand saws is measured from point to butt on the cutting edge. Cross-cut saws are made in different lengths.

Some patterns of Disston cross-cut saws are made with blades 20, 22, 24 and 26 inches long; and rip saws with blades 26 inches. Saws 24 inches and shorter are known as panel saws. The 20 inch, 10 point cross-cut saw is most popular among the shorter saws.

## How to use a Cross-Cut Saw

Using a cross-cut saw differs in some ways from the manner in which a rip saw is used. While practically all rip cutting is on the forward stroke, the cross-cut saw cuts on both forward and back strokes.

Use two sawhorses of equal height, and cut from outside the area, as shown in illustration at right. When cutting within the area, you risk pinching saw and splitting the work.

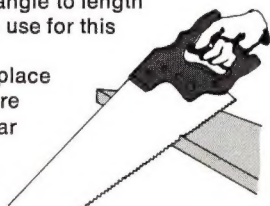
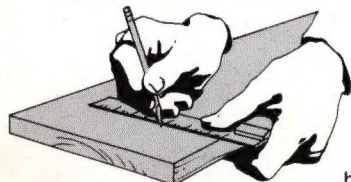


Be sure measurements are exact,

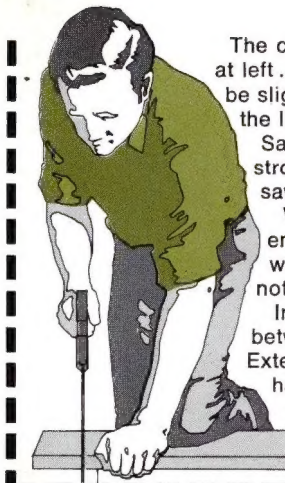
and that your mark for straight cutting is at right angle to length of board. The best tool to use for this marking is a try square.

When starting the cut, place saw at side of line to assure proper length. Start cut near butt of saw, using a short

draw stroke. Repeat slowly a few times until a slight groove is started, then cut straight with a full stroke.







The correct position for cross-cutting is shown in the illustration at left. An imaginary line through the saw, arm and shoulder would be slightly to the left of the saw blade, permitting a clear view of the line of cut and action of saw at each stroke.

Sawing progresses easier, truer and faster when full-length strokes are made. Muscles do not tire so quickly; and the saw stays sharp longer.

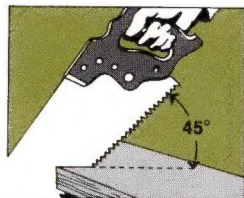
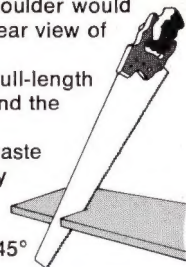
When the cut is nearly completed, support the waste end of the work with the free hand, and cut slowly with light, short strokes to avoid splintering. Do not twist off waste with saw blade.

In cross-cutting it is best to maintain an angle of  $45^\circ$  between the saw and the face of the work.

Extending the forefinger along the side of the handle aids in guiding the blade. Take long easy strokes and make each stroke do its work.

Look carefully at repair work to see that there are no nails in the path of saw.

Don't throw your saw around; keep blade covered with a thin coat of light oil and hang it up when not in use.

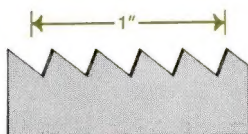
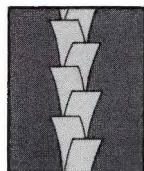


## What is a Rip Saw?

The Rip Saw is used for cutting with the grain. Teeth differ from those of a cross-cut saw in size and shape. The Rip Saw has fewer teeth, or points, to the inch, hence they are larger. The angle of a rip tooth is  $8^\circ$  from the perpendicular. The cutting edges are square instead of pointed. Although both types of saws are interchangeable to some extent, each should be used specifically for the kind of work for which it is designed.

### The Rip Saw tooth. Points to the inch

The tooth resembles a small chisel, and its cutting action is much the same, each tooth chipping out a small portion of the wood from the kerf. Cutting is done by the forward stroke.



The upper half of each tooth is set alternately, one to the left and one to the right, to give clearance. This set, on each side, is equal to one-third or less the thickness of the blade.

The size of the teeth in a saw is determined by points to the inch, as shown in the illustration above.

Disston Rip Saws are made  $5\frac{1}{2}$  points to the inch in the 26-inch length.

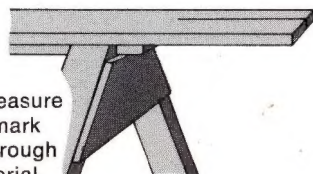
### Length of blades

Blade lengths of both rip and cross-cut hand saws are measured from point to butt on the cutting edge. Rip saws are made 26 inches in length. Cross-cut saws are made in different lengths.

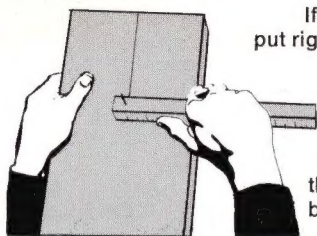
## How to use a Rip Saw

Place the board, which you are to saw, at about knee height. This enables you to get well above your work, and saw with comfort, and cut a straight kerf.

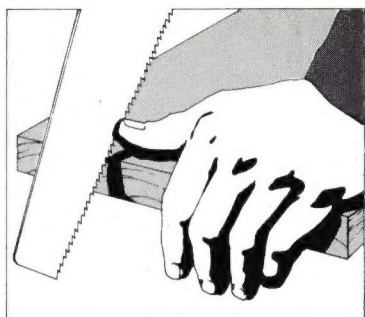
Your first operation is to mark the cutting line. Be sure your measurements are exact before starting. The best instrument to use is a mark ing gauge. After your line has been marked, do not cut straight through the center of the line, but along the side of it into the waste material.







If you are right-handed put right knee (left knee when cross-cutting) on board, and your left hand a few inches to the left of the cutting line so that the weight of the body is comfortably balanced.



Start the cut with the teeth at the end of the blade, and with a draw stroke. Put very little pressure on the saw until the kerf is well started. Then take long, easy strokes. Do not force the blade at any time.

This is not only tiring, but it also makes following the line more difficult.

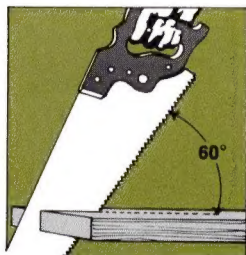
When most of the cutting is done with a few inches in the middle of the blade, the saw is dulled more rapidly and wears unevenly.

Get well above your work so that the eye is on the same line with the saw blade and marking.

The proper angle for ripping is  $60^\circ$  between tooth edge and board.

If board is thin, lessen this angle to about  $45^\circ$ .

Finally: Keep your saw sharp. Disston Rip Saws cut fast, smooth and easily when kept properly sharpened. Users say that Disston saws retain their keen cutting points longer than other saws.

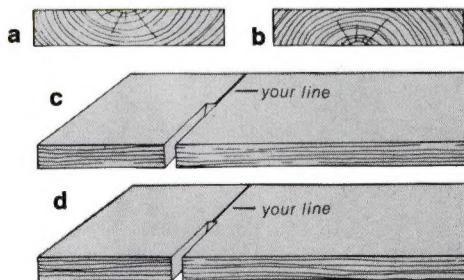


## Hints regarding use of hand saws

When sawing across the grain, if nature of work permits, place board as shown at (b) right. This avoids splintering at the last resin ring, as sometimes happens when the board is placed as shown in illustration (a).

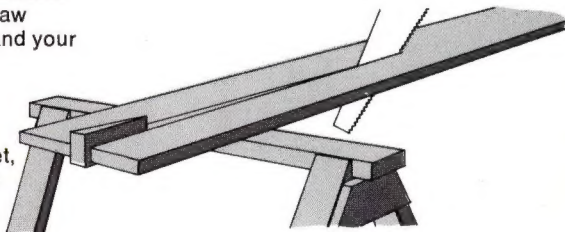
When ripping or cross-cutting keep on waste side of line — do not try to saw on the line or "saw out the line." This assures that board will be of right width or length, see illustration (c) right. When cutting on the line you cut into the board as well as the waste as shown in (d).

The same principle applies when cutting a mortise. Remember that accuracy is essential in good carpentry. Measure carefully, saw straight, keep into the waste material, and your pieces will fit together smoothly.



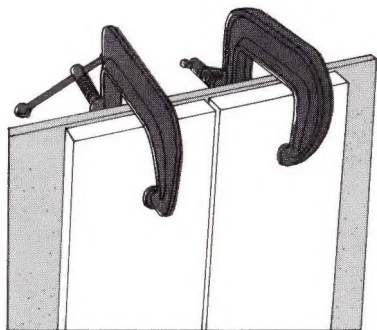
### When rip-sawing a long board

After a rip cut has extended a few feet, the kerf may close sufficiently to cause the saw to bind. To avoid this, insert a small wedge at start of cut.

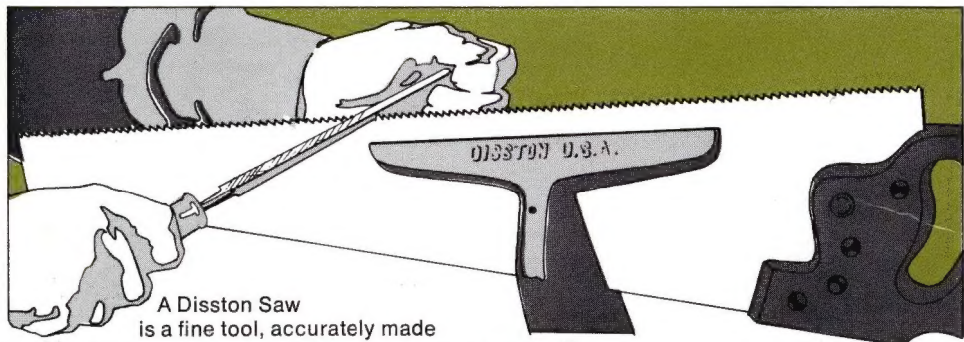


## When cutting plywood or wallboard

When cutting plywood or wallboard place material on edge with guide boards securely clamped at top and bottom. Clamp these guides to board that is to be cut, making distance between guides equal to width of saw teeth. Then saw with blade between clamped boards and your cut will be straight and true.



## How to Sharpen a Hand Saw



A Disston Saw

is a fine tool, accurately made

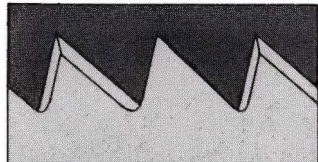
by skilled mechanics, and will give a life-time of service if properly handled. Use it as a fine tool should be used. When necessary to set and file it, follow these instructions carefully.

*Before starting work, read ALL the directions. Then, as you work, read them step by step.*

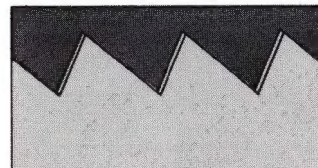
First examine the tooth-edge of your saw to see if teeth are uniform in size and shape, and that they are properly set.

It is not necessary to reset the teeth of a well-tempered hand saw every time it needs sharpening. If the teeth are touched up with a file from time to time as the saw is used (on the same principle as stropping a razor) the saw will cut longer and better, and sufficient set will remain to enable the saw to clear itself.

Second, study the shape of the teeth. Teeth of saws for cross-cutting should be shaped as shown in upper illustration (a). Teeth of saws for ripping should be shaped like those shown in lower illustration (b).



a



b



## Purpose of set

The purpose of setting the teeth of saws, that is, springing over the upper part of each tooth (not more than the half of the tooth nearest the point), one to the right, the next to the left, and so on alternately throughout the entire tooth edge, is to make the saw cut a kerf slightly wider than the thickness of the blade. This gives clearance and prevents friction which would cause the saw to bind and push hard in the cut.

## Depth of set

Whether the saw is fine or coarse, the depth of the set should not go lower than half the tooth. This is important. If deeper than this it is likely to spring, crimp or crack the blade, if it does not break out a tooth.

A taper ground saw requires very little set, for the blade, being of uniform thickness along the entire tooth edge, tapers thinner to the back and also tapers from butt to point along the back which provides the measure of clearance necessary for easy running.

Soft, wet woods require more set and coarser teeth than dry, hard woods. For fine work on either hard or soft dry woods, it is best to have a saw with fine teeth and only a slight set.

In setting teeth, particular care must be taken to see that the set is regular. It must be the same width from end to end of the blade, and the same width on both sides of the blade, otherwise the saw will not cut true, it will run out of line and the cut will be "snaky." Frequently complaints have been made that a saw is soft and will not hold an edge, when the main trouble is the irregularity of the width of the set.



## Filing the teeth

The only equipment necessary consists of a clamp and files. The clamp should be sufficiently strong to hold the blade firm enough to prevent chattering, and one in which the blade can be placed and tightened easily and quickly. The top of the clamp should be on a line with the operator's elbows for best working position.

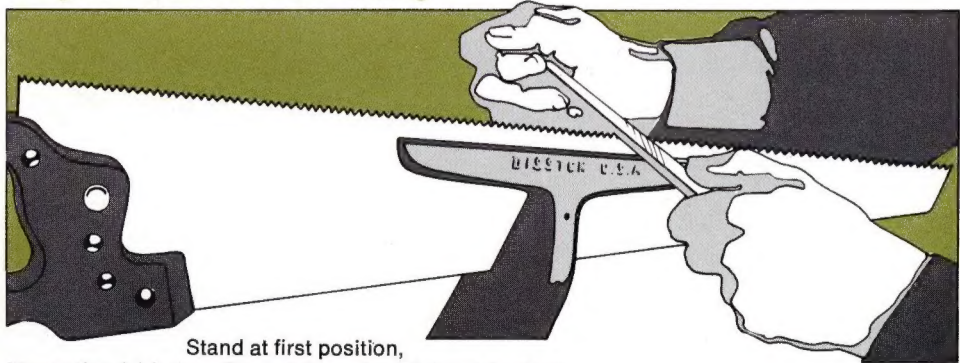
The following table indicates the file to be used:

4½, 5½, 6 points — 7 inch Slim Taper	11, 12, 13, 14, 15 points — 4½ inch Slim Taper
7, 8 points — 6 inch Slim Taper	Over 16 points — 5 inch Superfine Metal Saw, No. 2 Cut
9, 10 points — 5 or 6 inch Slim Taper	

Place the saw in filing clamp WITH HANDLE AT RIGHT. The bottom of the gullets of teeth should be ⅛ inch above the jaws of the clamp. If more of the blade projects the file will chatter or screech. This dulls the file quickly.

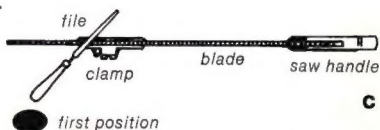
It will assist you to file a saw properly, if at the start, you pass a file lightly down the tops of the teeth to form a VERY SMALL flat top on each tooth. The purpose of this is to provide a guide for filing. Now, file the teeth as instructed in the following paragraphs:

## Filing Hand Saws for cross-cutting



Stand at first position, illustration (c) below. Start at the point. Pick out the first tooth that is set *toward* you. Place file in the gullet to the **LEFT** of this tooth. Hold file directly across the blade. Then swing the file handle toward the **LEFT** to the desired angle. Illustration at right shows the correct angle.

Hold the file level and at this angle. Do not allow file to tip upward or downward. Be sure the file sets down well into the gullet. Let it find its own bearing against the

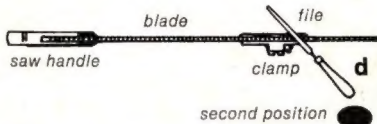




teeth it touches. It will help the beginner if he will first observe the shape and bevel of some of the unused teeth that can most always be found near the handle-end of a saw. If these teeth are shaped as they left the factory, they will serve as a guide.

The file should cut on the push stroke. It files the back of the tooth to the left and the front of the tooth to the right at the same time. File the teeth until you cut away one-half of the flat tops you made on the teeth as a guide. Skip the next gullet to the right, and place the file in the second gullet toward the handle. Repeat the filing operation on the two teeth the file now touches, being careful to file at the same angle as before. Continue this way, placing the file in every second gullet, till you reach the handle-end of the saw.

Study the second position illustration (d) before you go further. Turn the saw around in the clamp, **HANDLE TO THE LEFT**. Take second position. Place the file in the gullet to the **RIGHT** of the first tooth set **TOWARD** you. This is the first of the gullets you skipped when filing the other side of the saw. Turn file handle to the desired angle toward the **RIGHT**. Now file until you cut away the other half of the flat top made on the teeth as a guide, and the teeth are sharpened to a point. Continue this, placing file in every second gullet, until you reach the handle of the saw.



In filing teeth use care to see that in the final sharpening all the teeth are of the same size and height, otherwise the saw will not cut satisfactorily, as the teeth being of uneven sizes will place the strain only on the larger or higher teeth, and will cause the saw to jump or bind in the kerf; this will in many cases kink the blade, throwing it out of true.

### Filing Hand Saws for ripping

With one exception, this operation is exactly the same as that given for cross-cut saws. This exception is that rip saws are filed with the file held **STRAIGHT ACROSS** the saw, at a right angle to the blade. The file should be placed in gullet so as to keep the angle on the front of each tooth  $8^\circ$  at front,  $52^\circ$  at back.

Place saw in clamp with handle toward the right. Start at the point. Place the file in the gullet to the left of the first tooth set toward you.

Continue, placing file in every second gullet and filing straight across. When handle of saw is reached in this way, turn saw around in the clamp. Start at point again, placing file in first gullet skipped when filing from other side. Continue to file in every second gullet until handle-end of saw is reached.

In reading this part of the saw filing instructions, the inexperienced user may be tempted to save the trouble of turning the saw around in clamp and try to file all teeth from the same side of the blade. Don't do it — this practice is one of the things that makes saws run to one side. This should never be done either with the rip saw or with a cross-cut saw.

### Bevel of the teeth

The proper amount of bevel to give the teeth is very important, for if there is too much bevel the point will score so deeply that the fibres severed from the main body will not crumble out as cut, but must be removed by continued rasping.

The illustration, first figure at right, shows — a tooth (enlarged) of a cross-cut saw with the same amount of bevel front and back. This saw with long front (b) is best suited for work in soft woods where rapid, rather than fine work, is required.

The second illustration shows a tooth (enlarged) of a saw for medium hardwoods. This tooth has less bevel on the back which gives a shorter bevel to the point as at (b).

It will be seen from these illustrations that the bevel on the front of the teeth is about the same, but the bevel of the point looking the length of the saw is quite different, depending upon the difference in the angles of the backs of the teeth. Here again, experience will indicate what is best. For the beginner, we recommend that the instructions given under Filing the Teeth be followed carefully.

